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## Paulsboro Train Derailment

Paulsboro, NJ - EPA Region II

POLREP #5

Progress POLREP

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U.S. ENVIRONMENTAL PROTECTION AGENCY  
POLLUTION/SITUATION REPORT  
Paulsboro Train Derailment - Removal Polrep



### UNITED STATES ENVIRONMENTAL PROTECTION AGENCY Region II

**Subject:** POLREP #5  
Progress POLREP  
Paulsboro Train Derailment

**Paulsboro, NJ**  
**Latitude: 39.8345751 Longitude: -75.2368212**

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**From:** Terry Kish, On-Scene Coordinator  
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**Date:** 12/4/2012

**Reporting Period:** 12/4/2012@0700 to 12/5/2012@0700

#### 1. Introduction

##### 1.1 Background

<b>Site Number:</b>	A22R	<b>Contract Number:</b>	
<b>D.O. Number:</b>		<b>Action Memo Date:</b>	
<b>Response Authority:</b>	CERCLA	<b>Response Type:</b>	Emergency
<b>Response Lead:</b>	PRP	<b>Incident Category:</b>	Removal Action
<b>NPL Status:</b>	Non NPL	<b>Operable Unit:</b>	
<b>Mobilization Date:</b>	11/30/2012	<b>Start Date:</b>	11/30/2012
<b>Demob Date:</b>		<b>Completion Date:</b>	
<b>CERCLIS ID:</b>	NJN000206653	<b>RCRIS ID:</b>	
<b>ERNS No.:</b>		<b>State Notification:</b>	
<b>FPN#:</b>		<b>Reimbursable Account #:</b>	

##### 1.1.1 Incident Category

Transportation Related - Conrail train car derailment

##### 1.1.2 Site Description

##### 1.1.2.1 Location

At approximately 0700 EST on 30 November 2012, Thirteen Conrail freight cars transporting chemicals and other goods derailed and overturned at a bridge crossing the Mantua Creek in Paulsboro, New Jersey. The incident occurred near the 200 block of East Jefferson Street. The Department of Transportation reported three cars fell into the creek. Conrail reported one of the tank cars released approximately 180,000 pounds of vinyl chloride into Mantua Creek. Onlookers also reported seeing a vapor cloud rise from the scene.

Mantua Creek is a stream in Mantua Township in Gloucester County. It flows northwest for 18.6 miles to the Delaware River at Paulsboro across from the Philadelphia International Airport. The FAA reports airport operations were unaffected. Mantua Creek is approximately 150 feet wide at the location of the bridge collapse. The incident occurred approximately 1.4 miles upstream of the outlet into the Delaware River.

The NTSB has been on scene since 1400 hours on 30 November 2012 conducting their investigation.

#### **1.1.2.2 Description of Threat**

USCG, NJDEP, EPA and Gloucester County Emergency Response, including HAZMAT, responded to the incident. Gloucester County Emergency Response initially ordered residents to shelter-in-place. A half-mile radius evacuation zone was also issued for local residents. Paulsboro High School was placed on lockdown at 0715 EST. The school was later dismissed. The Transportation Security Operation Center reported that 18 residents reported possible effects from the spill and were placed in a staging area for decontamination.

Vinyl chloride is an industrial chemical described as a colorless gas with a sweet odor and known to be highly toxic, flammable and carcinogenic. It is primarily used in the production of PVC. According to the Environmental Protection Agency, short-term exposure to high levels of vinyl chloride in the air has resulted in central nervous system effects such as dizziness, drowsiness and headaches.

Two VCM cars were directly involved in the accident. One car was pierced and off-gassed approx. three quarters of the 22,000 gallons of VCM. Self-refrigeration froze the remaining VCM inside the car. An oil sheen was observed and is attributed to hydraulic fluid from the bridge entering the creek. Hard and soft boom was deployed on the creek by private contractor.

#### **1.1.3 Preliminary Removal Assessment/Removal Site Inspection Results**

On November 30, 2012, EPA initiated air monitoring with the TAGA unit based in Edison, NJ. Preliminary results for VCM revealed ambient levels up to 1.3 ppm using actual GCMS.

## **2. Current Activities**

### **2.1 Operations Section**

#### **2.1.1 Narrative**

#### **2.1.2 Response Actions to Date**

Refer to POLREPs 1, 2, 3 and 4 for previous response actions.

During this operational period, air monitoring operations continued with nine AreaRAEs providing real-time VOC results through the Viper System. In addition, two mobile RST teams equipped with PIDs are roving the neighborhood and responding to readings observed on the AreaRAEs. The ERT TAGA bus continued to perform real-time analytical, focusing on the perimeter of the evacuation zone and responding to validate PID readings.

Due to the observation of VOCs beyond the perimeter of the evacuation area intermittently over the past two nights, Incident Command expanded the evacuation area one block to the north and to the west impacting approximately 100 additional homes. The shelter-in-place order remains in effect for the town.

As of 0700 hours 12/4, VOC levels varied from 0 ppm to 10 ppm at the AreaRAE closest to the wreck. This is attributable to the change in atmospheric conditions as the sun rose and began to warm the land. By 0845 VOC levels declined to 0 ppm and have remained at that level as of 1500 hours.

From 1630 to 2100 hours on 12/4, AreaRAEs recorded two VOC exceedances of the 1.0 ppm action limit set by incident command. At one location inside the evacuation zone and situated the closest to the incident, an exceedance was recorded which lasted 11 minutes and peaked at 3.4 ppm (corrected). Another exceedance was recorded which lasted 17 minutes and peaked at 11.0 ppm (corrected). At a second location, outside the evacuation zone along Mantua Creek, an exceedance was recorded which lasted for 26 minutes and peaked at 5.8 ppm (corrected). Recurring brief VOC exceedances have been observed at this location which is one half mile NNW of the accident. ERT has been tasked to collect a 24hr air sample from this location to quantify the potential for exposure over a 24 hour period. RST teams monitored this area through the night. No additional exceedances were observed. Additional 24 hr air samples will be co-located with selected AreaRAEs during the next operational period.

From 2100 hours on 12/4 to 0600 hours on 12/5, zero VOC detections were observed by the AreaRAEs or RST mobile teams. The ERT TAGA bus completed a run through the town, focusing on the perimeter of the evacuation zone at approximately 2200 hours. No quantifiable concentrations of VCM were detected. Another run was initiated at 0530 hours on 12/5 as residents prepare to leave for work. RST teams only detected VOCs at one location during the 1900-0700 shift. A concentration of 2.4 ppm (corrected) was detected at the Crown Point Rd Bridge at approximately 0500 hours. Winds were steady throughout the night significantly improving the air monitoring results.

Conrail's plans for acetone flushing of the remaining VCM from the ruptured tank car have been approved by unified command and preparations were made through the night to prepare for this operation to begin on December 5.

Transfer operations have been complicated by the fact that the only location in which to access the remaining product is through the opening created by impact with a second tank car. The second tank car came to rest in the impact position, thus obstructing the opening. The initial transfer was accomplished by feeding a two inch tube into the car and using suction created by six railcars under vacuum to remove the product, while introducing nitrogen into the railcar to reduce ignition risks. This operation was effective, however, due to the wreckage limiting access to the opening, the position of the suction tube could not be optimized to completely empty the tank. Approximately 500-700 gallons of product remained.

The current operation will be completed by adding acetone from a truck into the ruptured tank of VCM. The VCM and acetone are miscible and thus the acetone will act as a carrier for the VCM. Unlike water, the introduction of acetone will not trigger rapid evolution of vapor. The resulting increased volume in the car will allow for transfer back into the truck in a manner similar to the first operation. Primary vapor control will be accomplished by drawing vapors from inside the tank using six tank cars which have been placed under vacuum. If needed, a secondary vapor control system will be in place in which a vacuum truck filled with diesel fuel will be utilized to draw vapors from the ruptured car. The recovered vapors will be pulled through the fuel as a primary scrubber and the vacuum-truck exhaust will be polished by activated carbon filters treated with potassium permanganate. At the conclusion of the primary transfer, approximately 500-700 gallons of acetone/VCM mixture will remain. A separate, smaller, suction set-up has been fabricated to reach the remaining product. Following the removal of liquid product, purging the car of vapors will continue using vacuum tank cars and/or scrubber system.

### 2.1.3 Enforcement Activities, Identity of Potentially Responsible Parties (PRPs)

The PRP is Consolidated Rail Corporation (Conrail)

### 2.1.4 Progress Metrics

<i>Waste Stream</i>	<i>Medium</i>	<i>Quantity</i>	<i>Manifest #</i>	<i>Treatment</i>	<i>Disposal</i>

## 2.2 Planning Section

### 2.2.1 Anticipated Activities

#### 2.2.1.1 Planned Response Activities

EPA will continue to support the air monitoring efforts as requested by DEP.

#### 2.2.1.2 Next Steps

Following the completion of the VCM transfer, the next steps will include the following:

- Conduct a dive to assess the condition of the derailed cars and to evaluate rigging needs,
- Continue NTSB investigation,
- Removal of all non-HazMat rail cars, and
- The use of barge cranes to remove debris and lift HazMat rail cars from the creek.

#### 2.2.2 Issues

## 2.3 Logistics Section

No information available at this time.

## 2.4 Finance Section

No information available at this time.

## 2.5 Other Command Staff

No information available at this time.

## 3. Participating Entities

No information available at this time.

## 4. Personnel On Site

EPA personnel and contractors onsite as of December 3@ 0300 hours.

1-EPA OSC  
 1-ERT (TAGA bus)  
 4-RST team members  
 4-SERAS team members

## 5. Definition of Terms

EPA - U.S. Environmental Protection Agency  
 RST - EPA Removal Support Team contractor, Weston Solutions, Inc.  
 SERAS - ERT Scientific, Engineering, Response and Analytical Service contractor, Lockheed Martin  
 VCM - vinyl chloride monomer  
 NTSB - National Transportation Safety Board  
 ppm - parts per million

ppb - parts per billion  
ERT - US EPA Environmental Response Team  
DEP - New Jersey Department of Environmental Protection  
TAGA - Trace Atmospheric Gas Analyzer

## **6. Additional sources of information**

### **6.1 Internet location of additional information/report**

[www.epaosc.org/paulsborotrainerailment](http://www.epaosc.org/paulsborotrainerailment)

[http://www.conrail.com/Paulsboro\\_Info.htm](http://www.conrail.com/Paulsboro_Info.htm)

### **6.2 Reporting Schedule**

Daily

## **7. Situational Reference Materials**

[http://www.epaosc.org/sites/8324/files/Evacuation\\_Zone.pdf](http://www.epaosc.org/sites/8324/files/Evacuation_Zone.pdf)